Welcome

PUBLIC OPEN HOUSE

Wednesday June 29, 2022 – 6pm to 8pm

Please sign in on the sheet provided. Then feel free to walk around and view the displays.

The purpose of this Public Open House session is to present work completed to date on the Stormwater (SWM) Environmental Assessment (EA) study being completed to evaluate existing stormwater drainage within the Mill Pond Park study area and to propose options for rehabilitation of Mill Pond, the Heritage Estates Stormwater Facility and nearby valleyland sites. The study is being conducted as a Schedule B project in accordance with the Municipal Class Environmental Assessment process. The boards present the development and evaluation of options under consideration and the preliminary preferred alternatives.

If you have any questions, our representatives will be pleased to discuss the project with you.

We are interested in receiving any comments that you may have about the project. Should you have any questions, comments, require further information or wish to be added to the project mailing list, please contact either of the following – or follow the link/QR code below to fill out the questionnaire online.

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Tell us what you think. The survey is open until July 17, 2022:
https://www.richmondhill.ca/millpondproject

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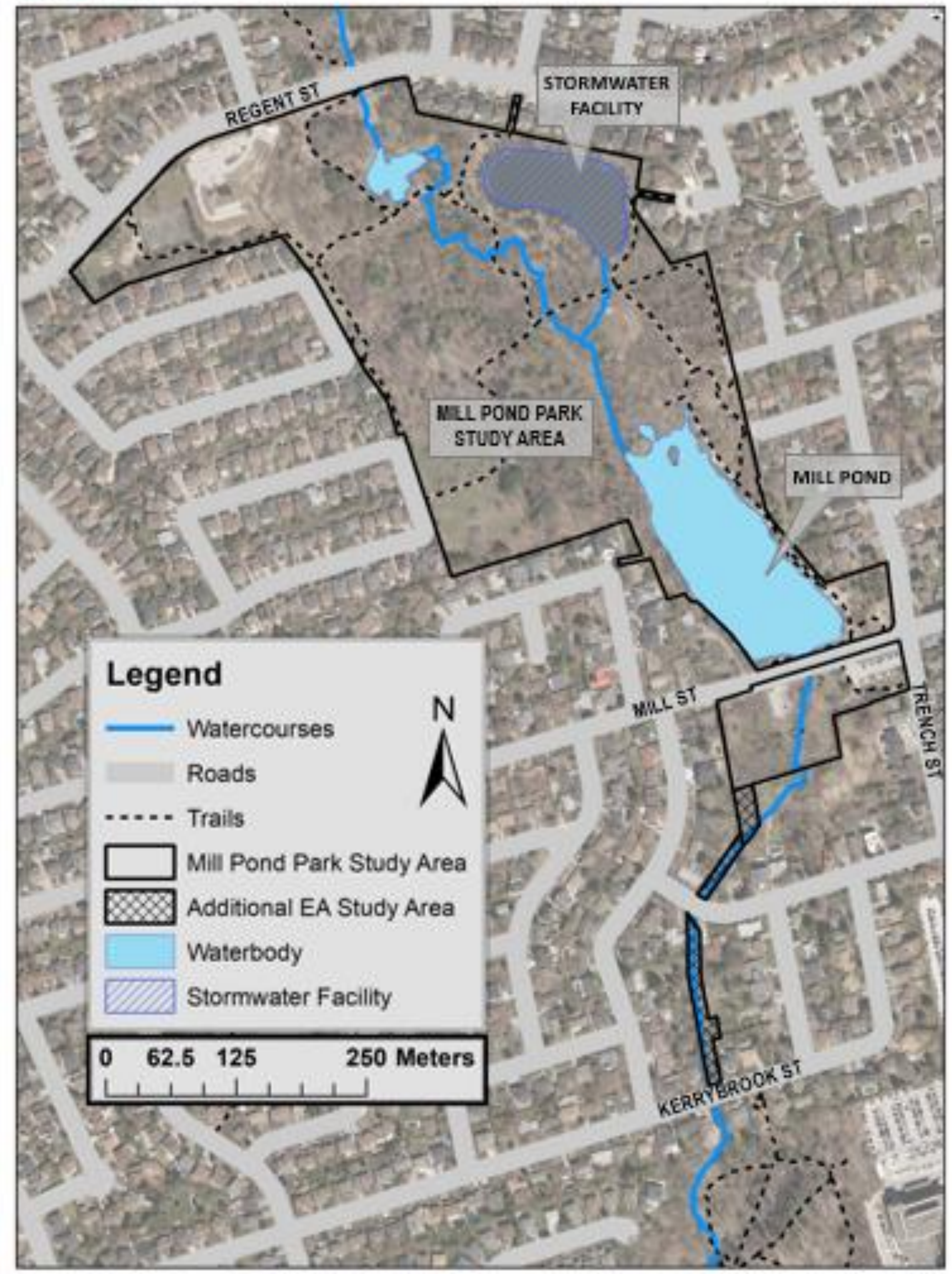
Study Area:



Class EA Process

Mill Pond Park Stormwater Rehabilitation
Municipal Class Environmental Assessment

Class EA Phase 1

Identify Problem or Opportunity
- Identify Need
- Initiate Consultation with the public and agencies
- **Notice of Commencement**

Background Review
- Obtain and review background documentation and initiate agency contact
- Identify data gaps to be addressed during the site inventory/ investigation

Class EA Phase 2

Site Inventory / Investigation
- Undertake natural heritage investigations
- Aquatic habitat assessment
- Incidental wildlife survey
- Undertake hydrology/hydraulics investigation
- Fluvial geomorphology
- Identify opportunities and constraints
- **Public Open House 1**

Evaluation of Alternatives
- Identify alternatives
- Complete impact assessment
- Evaluate alternatives
- Select preliminary preferred alternative
- Public Open House 2

WE ARE HERE

Preliminary Design / Project File Report
- Confirmation of preferred alternative
- Preliminary design of preferred alternative
- Recommendation for further study, if required
- Develop a monitoring, maintenance and adaptive management plan
- Prepare Project File Report
- Notice of Completion
- 30-day Public Review

Implementation

Detailed Design / Implementation
- Detailed design of the proposed works
- Obtain permits and approvals
- Prepare contract drawings and tender documents
- Construction and operation of the works
- Post-construction monitoring

January 2018	❑ TYLin (and supporting sub-consultants) initially retained to complete EA study and commence fieldwork components of scope. Work subsequently paused in 2020 to align with Mill Pond Park Master Plan process, re-initiated in early 2021.
March 2021	❑ Notice of Study Commencement issued and mailed to local residents.
September 2021	❑ Characterization of Existing Conditions completed and Public Consultation Open House #1 held September 20 – October 18 (virtually due to pandemic restrictions)
TONIGHT	❑ **Public Consultation Open House #2** Present existing conditions, alternative solutions, evaluation and selection of the Preliminary Preferred Solutions
Late 2022	❑ **Notice of Completion** Project File Report posted for 30 day public review period
2023	❑ **Detailed Design and Construction** Detailed Design scheduled to start following completion of EA study. Construction expected to take place in the next 4-5 years, subject to capital budget approval and grant funding

Note that this **Municipal Class EA** process is being followed for the study of stormwater rehabilitation opportunities within the Mill Pond Park study area – this is a separate process from the **Mill Pond Park Revitalization Master Plan** project. However, the two projects are being run concurrently by City staff and have many overlaps and interfaces. Later boards at this Open House present current information on the status of the Mill Pond Park Revitalization Master Plan.

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Study Area

- Mill Pond Park is a well used community facility, and a destination park within Richmond Hill (this EA is being undertaken alongside a Park Revitalization Master Plan).
- The Upper East Don River drains through the park and it was the construction of a water control structure at Mill Street in the mid 1800's that formed Mill Pond.
- The pond has historically been used to power a sawmill operation, and as a water supply reservoir, but has some stormwater function today.
- The total upstream drainage area is around 570 hectares.
- There are **three main components** of the study area that the EA focused on:

- Heritage Estates SWM Facility (17-3)
- Mill Pond
- Trail and River Areas

Existing Environments (1)

Mill Pond Park Stormwater Rehabilitation
Municipal Class Environmental Assessment

HERITAGE ESTATES SWM FACILITY

The SWM facility was designed and constructed in the late 1980's to control peak flow rates and mitigate impacts on water quality in the Upper East Don River

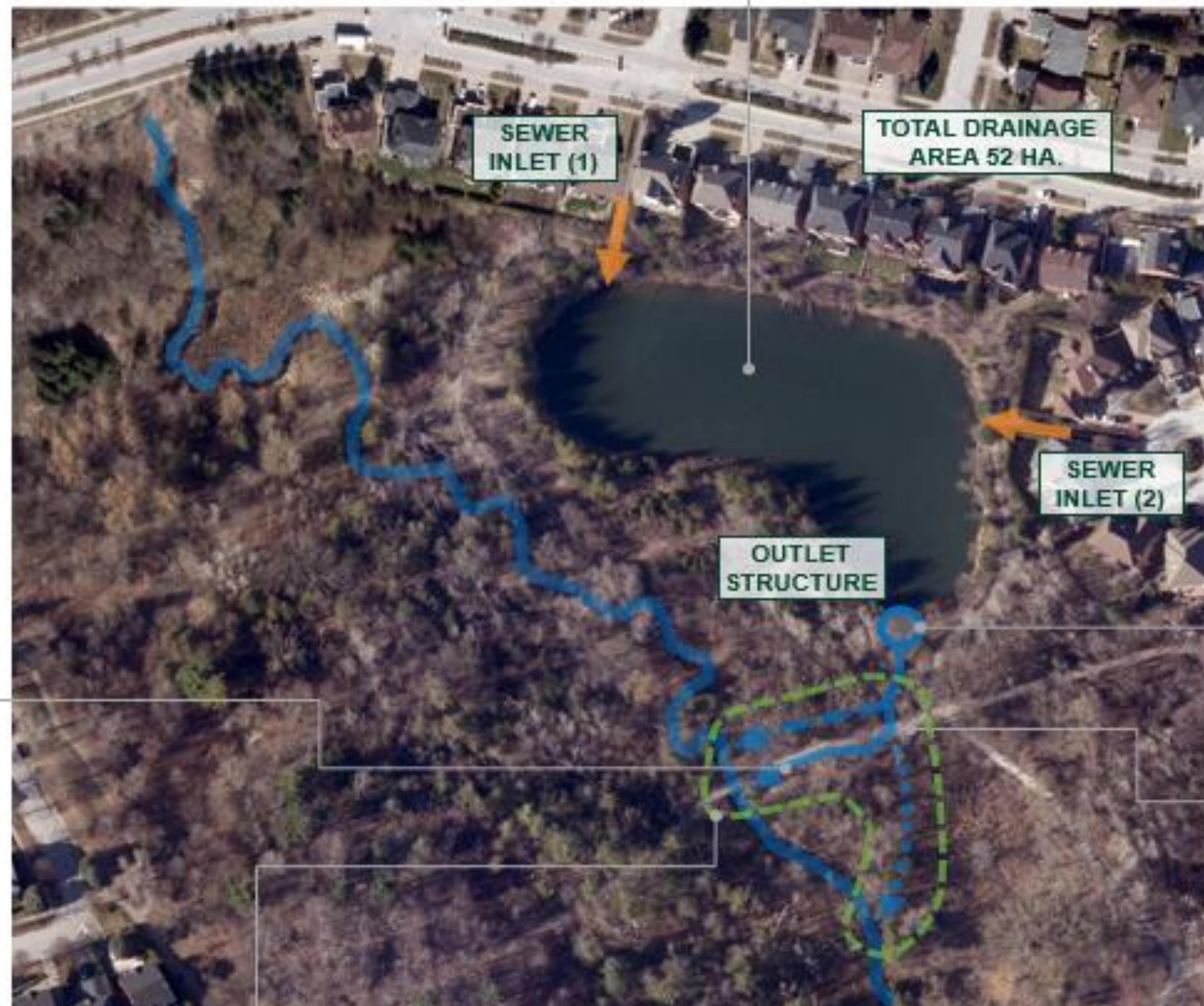
It still achieves the applicable **water quality** treatment objectives, per current guidelines

It does not provide sufficient storage volume to meet current **quantity control (flood control) or erosion control** guidelines

Storm sewer inlets and overland flow routes are generally in good condition

Ditches are eroding on both sides of the trail leading west

The pond has accumulated around 2,000 m^3 of sediment



The pond has discharged to the Upper East Don River using various flow paths over the years (see dashed blue lines)

Past scour at the weir outlet appears to have been stabilized by large boulders

Certain features of the pond do not meet current design guidance requirements – e.g. grading of side slopes, lack of forebay

The east side of the concrete weir is lower than the design high water level in the pond, and therefore may be damaged during large storms

This presents a public safety concern

The trail downstream of the facility outlet has evidence of being overtopped relatively frequently, and the trail culverts are in very poor condition

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Existing Environments (2)

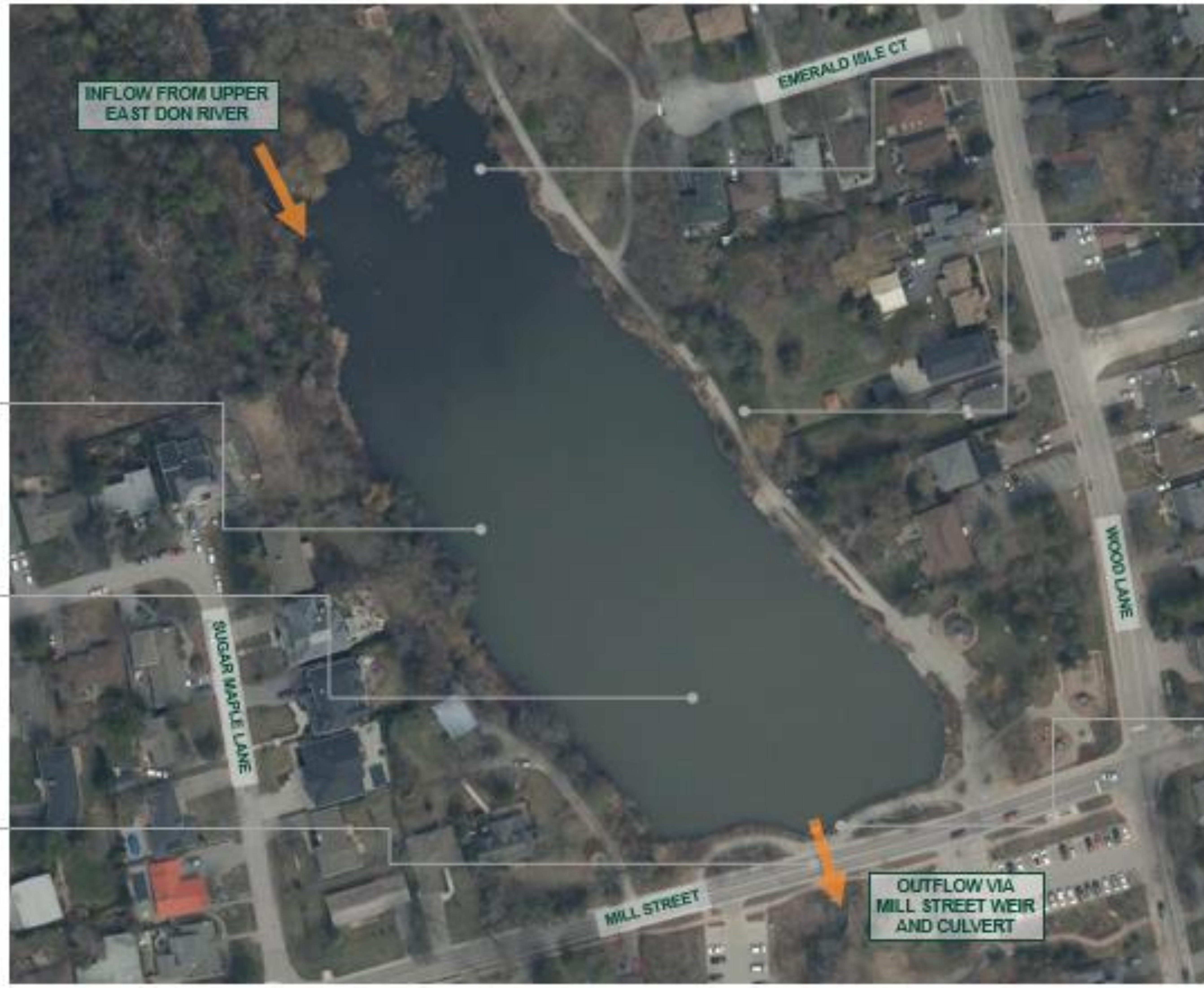
MILL POND

Mill Pond was not designed specifically to provide water quality or quantity benefits, and therefore currently provides only limited benefits in those regards.

Significant sediment accumulation, especially at the north end (estimated volume 16,500 m^3) which impacts downstream water quality and recreational activities.

Water levels do not fluctuate greatly over the year

The weir and culvert are barriers to fish passage and Mill Pond contributes to elevated water temperatures downstream (downstream reaches of the watercourse are identified as sensitive Redside Dace fish habitat)



Stagnant water conditions observed in the northeast corner of the pond

Poor drainage and standing water between the trail and residential lots

The concrete weir and Mill Street culvert are in good condition

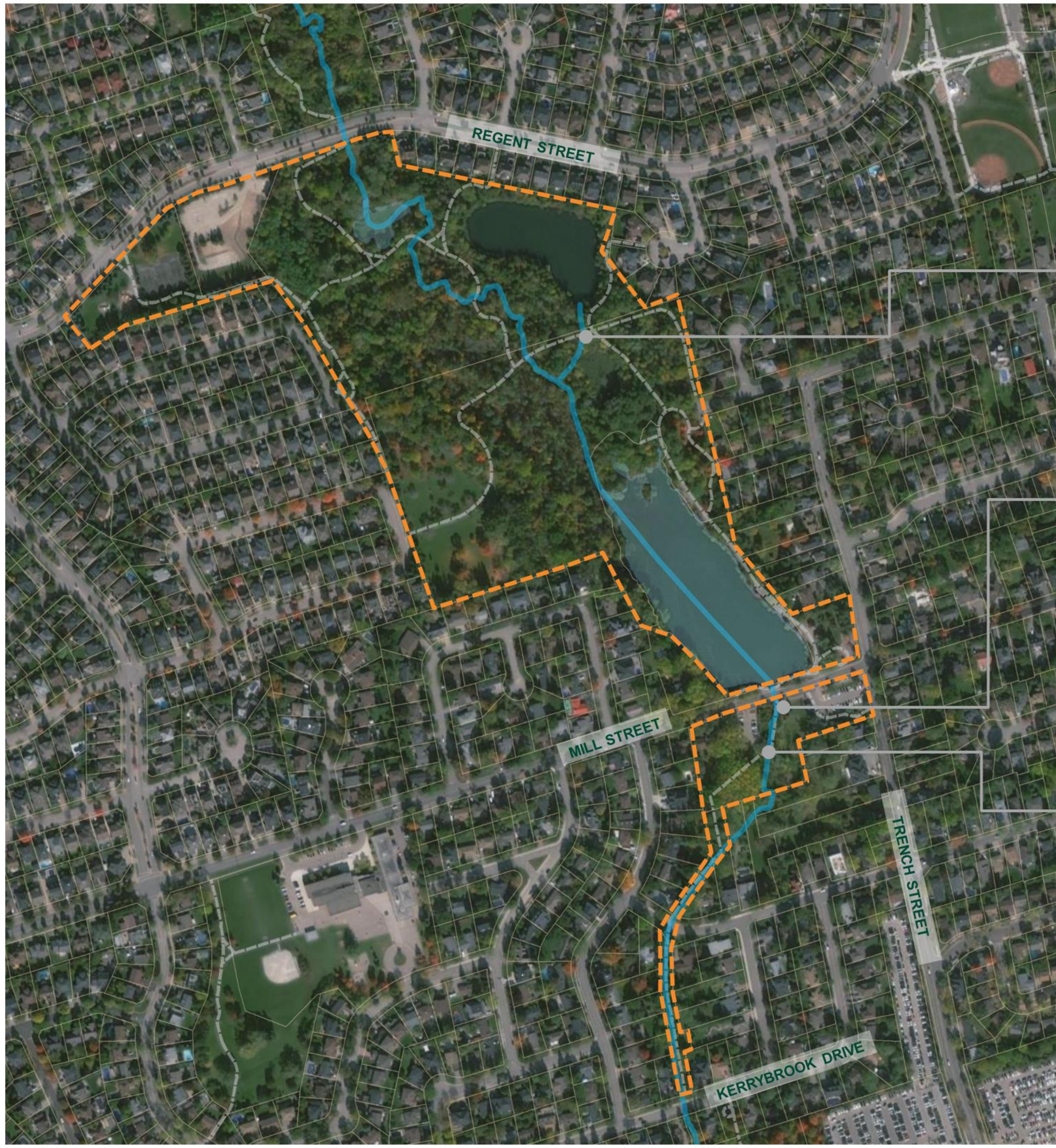
Existing Environments (3)

TRAIL AND RIVER

Upper East Don River observations include:

- The river is widening and depositing sediment in the north end of Mill Pond
- The channel downstream of Mill Pond is moving and widening
- There is erosion at pedestrian trail bridge and culverts (various locations)
- The trail west of the Heritage Estates SWM facility has been recently stabilized with rip-rap stone and chain link fencing
- Localized erosion issues were noted at Kerrybrook Drive

Bridges, culverts and boardwalks are generally in fair to good condition structurally, but are impacted by erosion and shallow cover



The twin 600 mm diameter culverts downstream of the Heritage Estates SWM facility outlet are in poor condition

The gabion wall south of Mill Street is slowly rotating due to undermining

The bridge south of Mill Street is in fair condition, with some deterioration of the timber caps

Potential Alternatives (1)

HERITAGE ESTATES SWM FACILITY (1)

DO NOTHING

- Leave the SWM Facility in its current condition.
- The pond would continue to provide adequate water quality treatment for stormwater runoff.

Drawbacks:

- The pond would continue to provide limited water quantity (flood) control.
- Erosion/scour around the outlet structure would remain unaddressed and the accumulated sediment would remain at the base of the pond.
- Sediment in the pond would continue to impact the pond's function.
- The outlet ditches would continue to erode and migrate over time, causing damage to sensitive natural vegetation.
- Steep side slopes of pond would continue to pose a health and safety risk.

Cost Estimate: *Zero implementation costs, but ongoing maintenance, repair and emergency costs would remain and likely increase.*

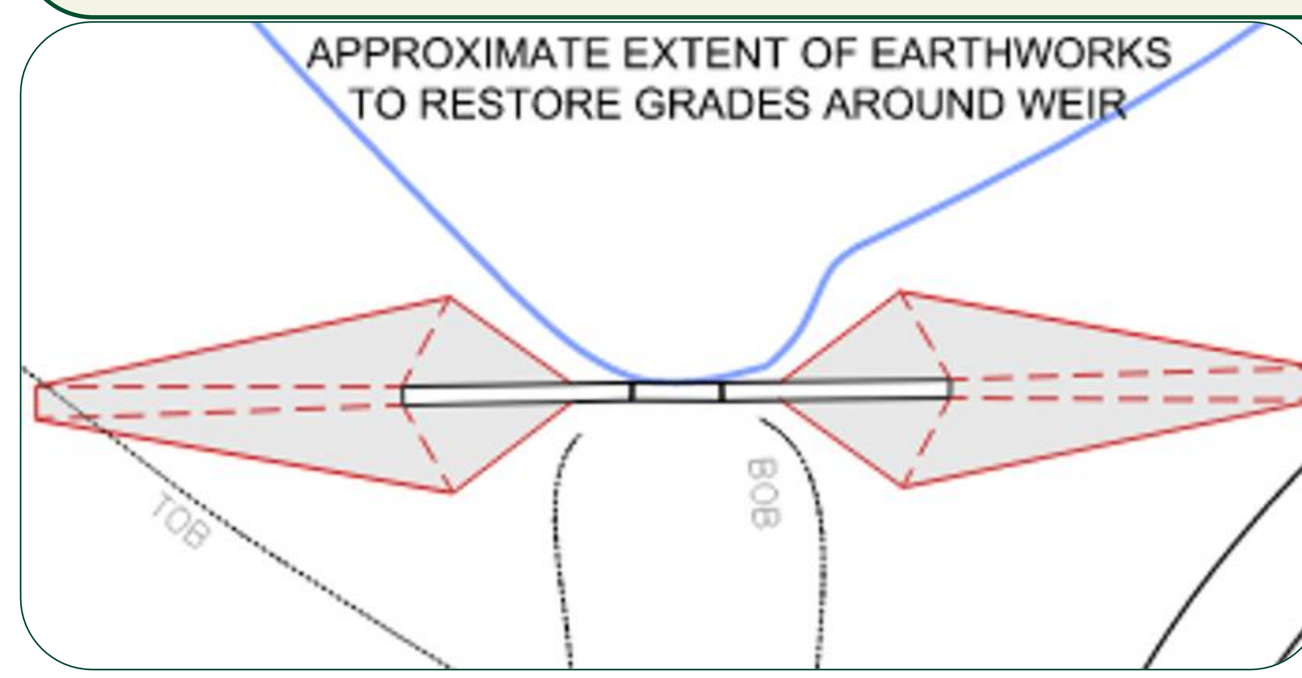
OPTION A1: "MINOR" REHABILITATION

- Focuses solely on concerns related to erosion of material around the outlet control structure.
- Works would consist of local repairs and restoration of grades around the existing concrete weir to prevent outflanking during large storm events.

Drawbacks:

- The pond would continue to provide limited water quantity (flood) control.
- Sediment in the pond would continue to impact the pond's function.
- No improvements to the stormwater management performance of the facility.
- Steep side slopes of pond would continue to pose a health and safety risk.

Cost Estimate: *$18,000*



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Potential Alternatives (2)

Mill Pond Park Stormwater Rehabilitation
Municipal Class Environmental Assessment

HERITAGE ESTATES SWM FACILITY (2)

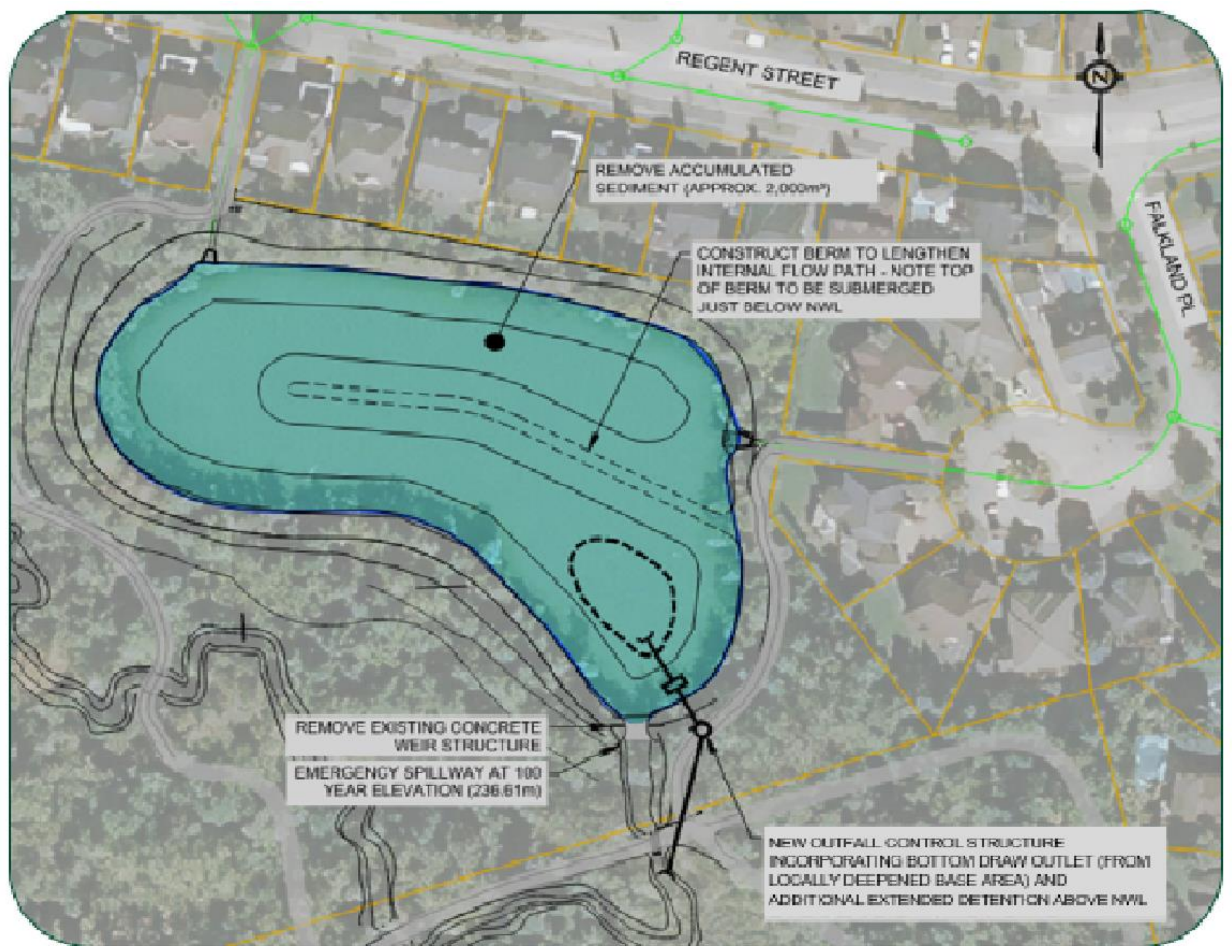
OPTION A2: “MODERATE” REHABILITATION

- Remove accumulated sediment (~2,000 m^3)
- Construct internal berm (to improve water quality treatment)
- Construct new bottom-draw outfall control structure to provide extended detention (erosion control) and mitigate downstream thermal impacts
- Remove existing concrete weir and construct emergency spillway in place

Drawbacks:

- Although the performance of the facility would be improved, the pond would still not meet current SWM design guidelines from a water quantity (flood control) perspective.

Cost Estimate: *$1,265,000*



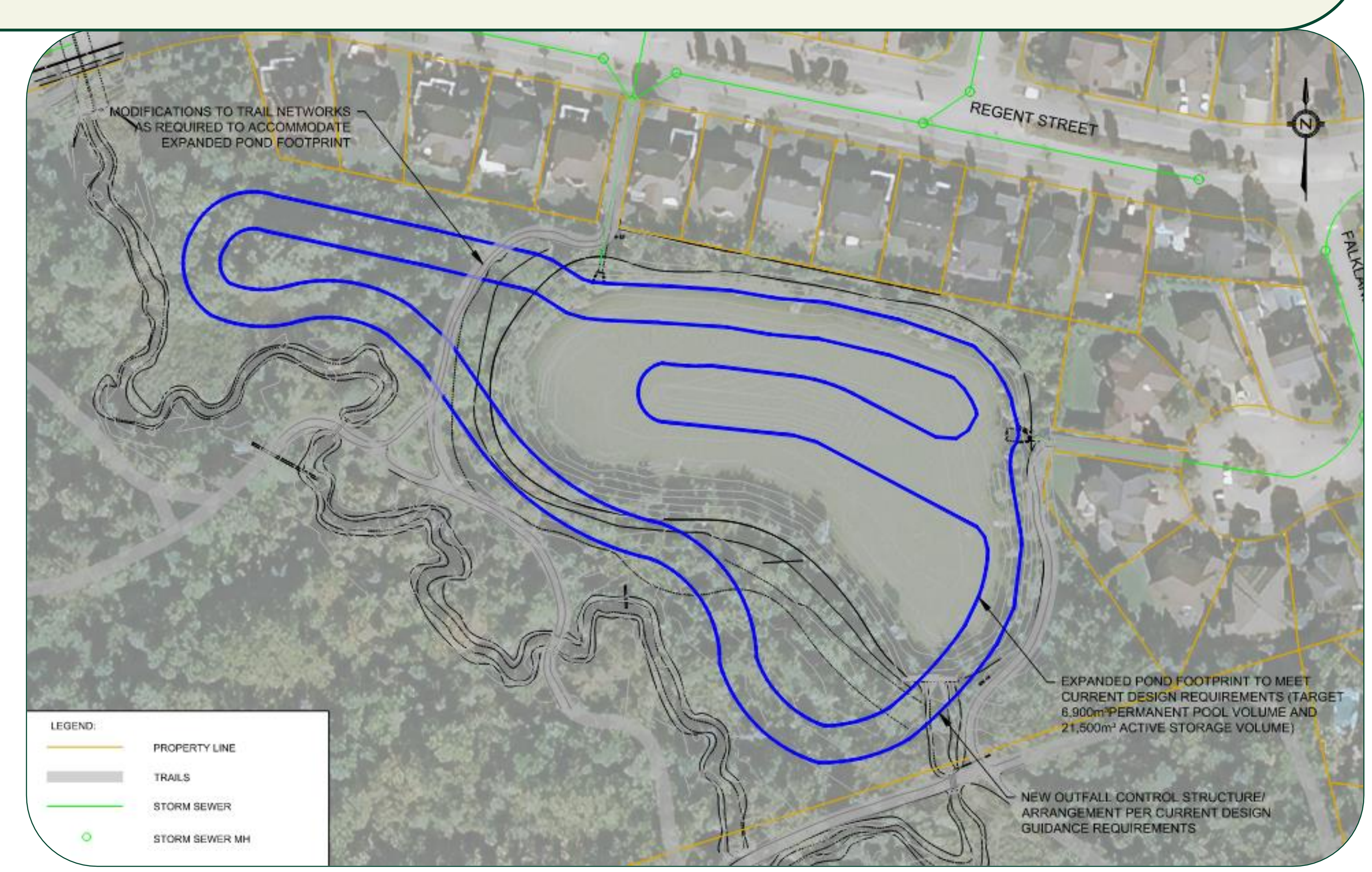
OPTION A3: “SIGNIFICANT” REHABILITATION

- Reconstruct entire facility to meet current best-practice SWM design guidelines (would require approximately double the current pond footprint to meet water quantity (flood control) best practices)

Drawbacks:

- Significant disruption to surrounding area and existing natural environment

Cost Estimate: *Un-costed, but significantly larger than “Moderate” option*



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Potential Alternatives (3)

Mill Pond Park Stormwater Rehabilitation
Municipal Class Environmental Assessment

HERITAGE ESTATES SWM FACILITY (3)

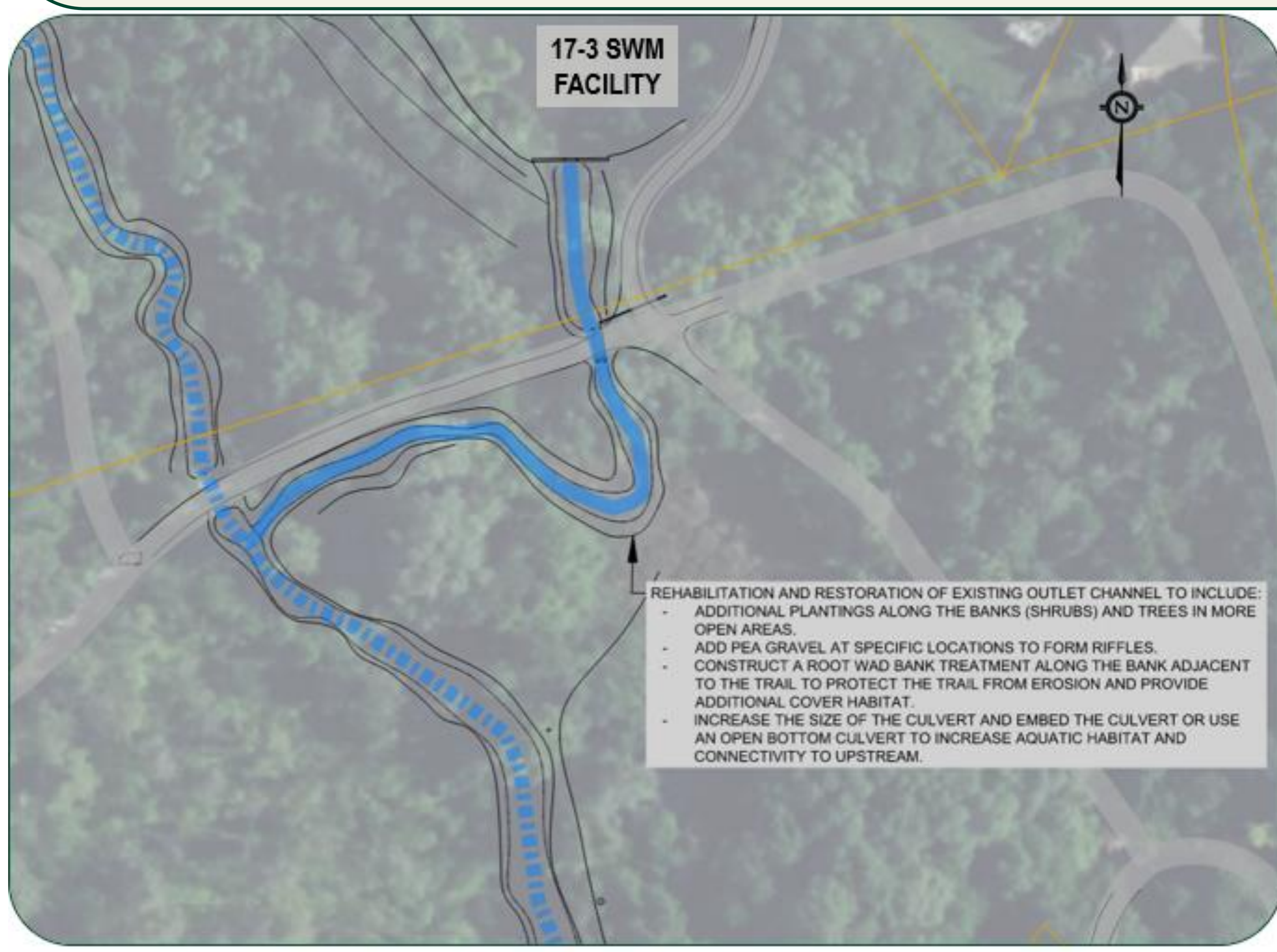
OPTION A4: OUTLET CHANNEL REHABILITATION

- Rehabilitation of existing outlet channel along current primary alignment.
- Additional plantings (shrubs along banks, trees in more open areas)
- Riffle construction (pea gravel) at regular intervals along channel
- Root wad bank treatment adjacent to trail
- Replace existing culvert with a new larger culvert crossing and consider an open bottom structure

Drawbacks:

- Erosion of natural area would likely continue
- Limited maintenance access to the channel if the existing granular path is replaced with a boardwalk (see Trail and River alternatives for details)
- Would not address stagnant water conditions in the north end of Mill Pond

***Cost Estimate:** $339,000*



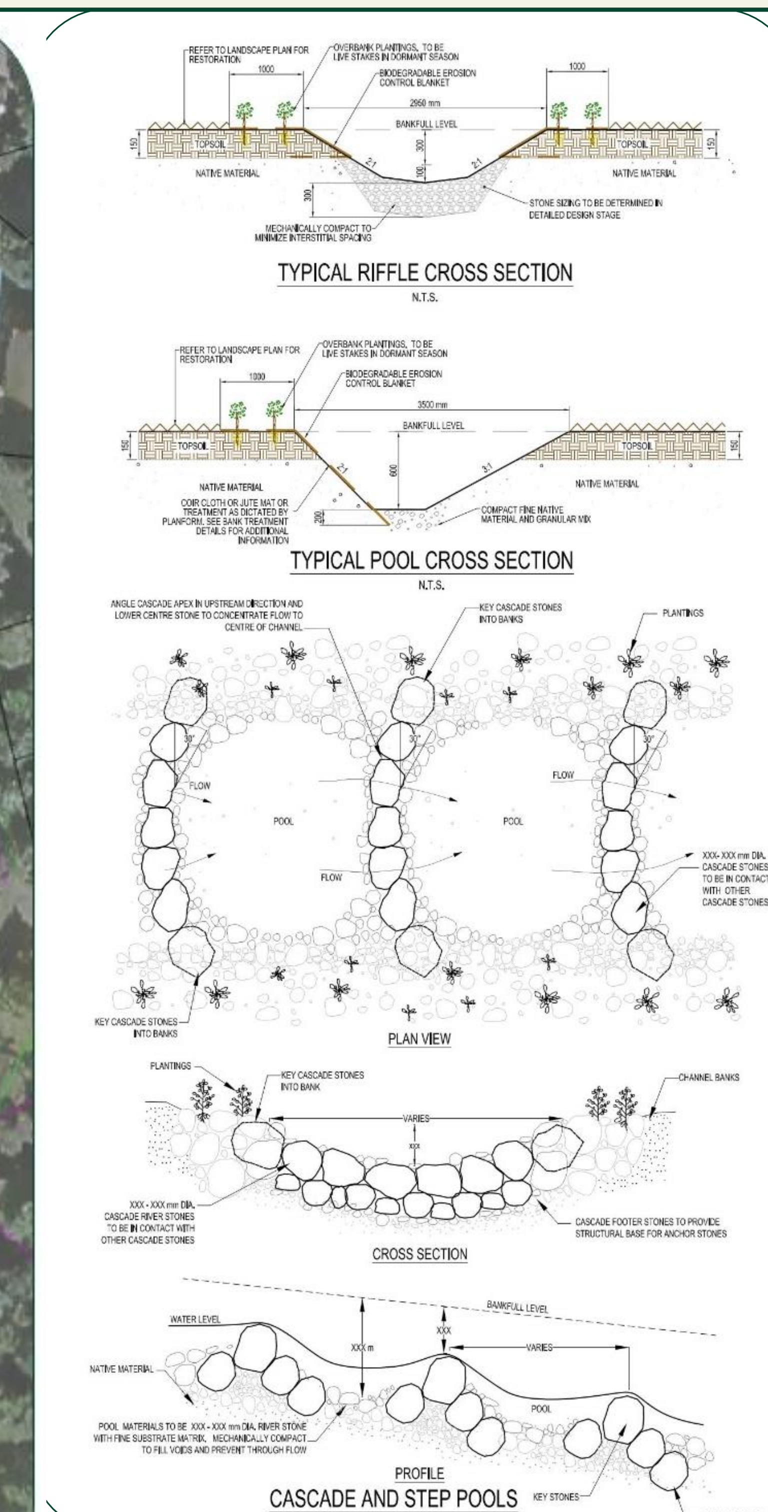
OPTION A5: NEW OUTLET CHANNEL*

- Disconnects SWM facility outlet from directly discharging into the river.
- Addresses stagnant water conditions in north end of Mill Pond and provides opportunity to increase native species diversity.
- Offers opportunities for educational signage and public engagement with environmental features, as well as potential for removal of invasive species (phragmites) and increase in diversity through native species planting.

Drawbacks:

- Needs to pass through existing wetland area (further investigations ongoing)*

***Cost Estimate:** $1,067,000*



*Note that further studies are ongoing to quantify the impacts of Option A5 on wetland areas north of Mill Pond and to assess the relative compensation activities that may be necessary to support implementation.

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Potential Alternatives (4)

MILL POND (1)

DO NOTHING

- Leave the pond and the existing outlet structure in its current condition.

Drawbacks:

- Negative impacts excessive sediment depths are having on aquatic habitat conditions would remain unaddressed.
- Thermal impacts the facility has on watercourse conditions downstream of Mill Pond would remain unchanged.
- The challenges the accumulated sediment presents from an amenity perspective (e.g. poor ice formation for winter skating) would remain unaddressed.
- The barrier to fish movement at the Mill Street weir would remain.

Cost Estimate: *Zero implementation costs, but ongoing maintenance, repair and emergency costs would remain and likely increase.*

OPTION B1: SEDIMENT REMOVAL

PARTIAL:

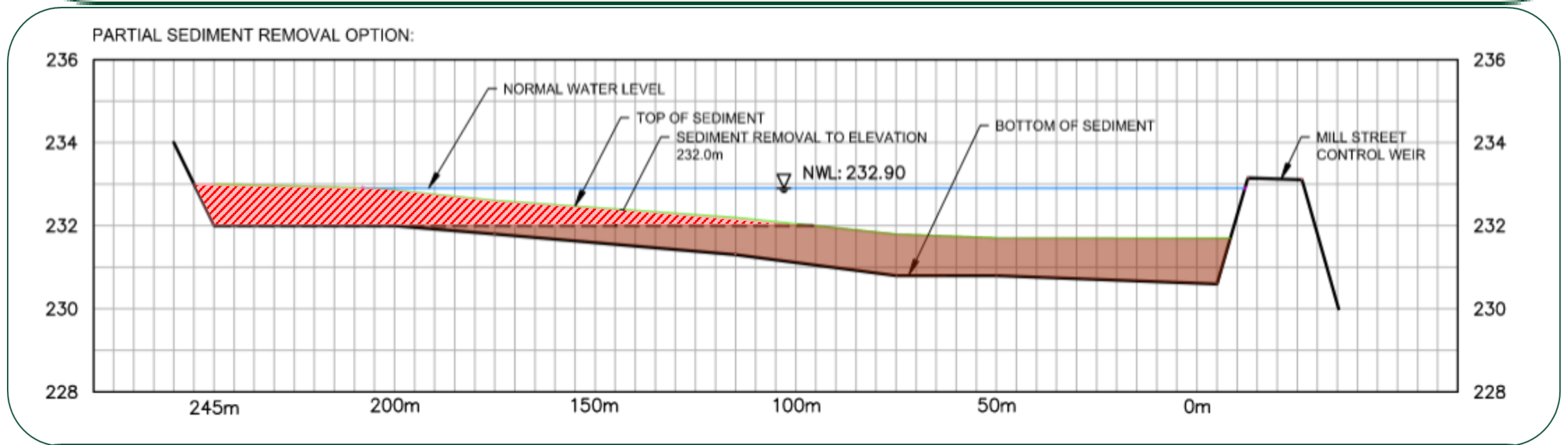
- Removal to elevation 232.0 m, ~37% of sediment removed (6,100 m^3 of 16,500 m^3)
- ***Cost Estimate:*** *$3,075,000*

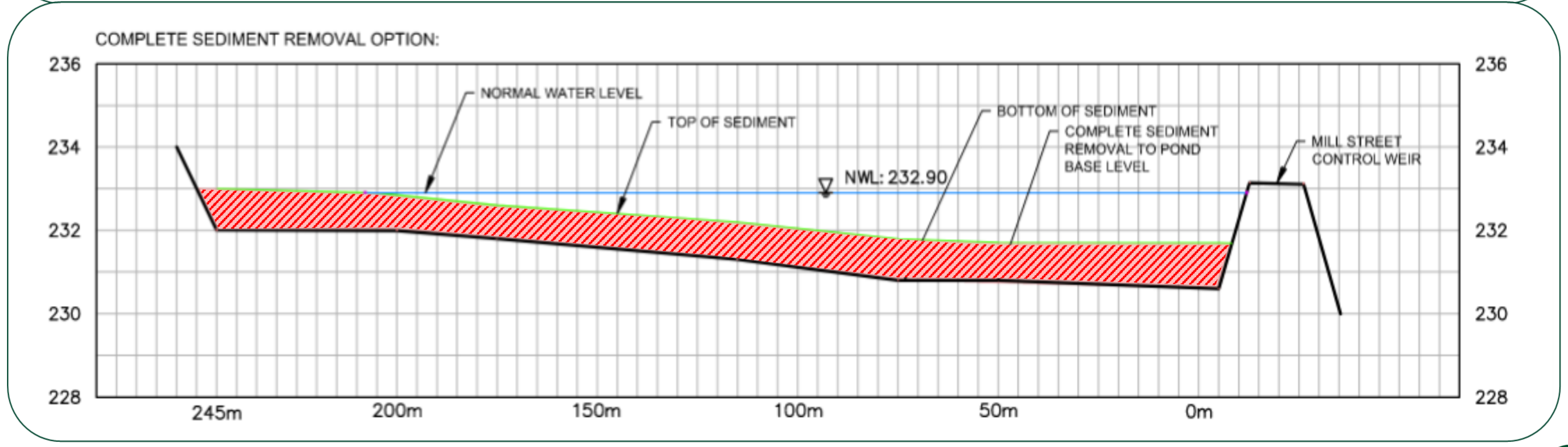
COMPLETE:

- Full sediment removal (16,500 m^3)
- ***Cost Estimate:*** *$8,316,000*

Drawbacks:

- Sediment removal at this scale will be costly and may be challenging from a logistical perspective, however it is considered a critical aspect of the project and was one of the main drivers for undertaking the study.





Sediment to be removed
Sediment to remain

Potential Alternatives (5)

MILL POND (2)

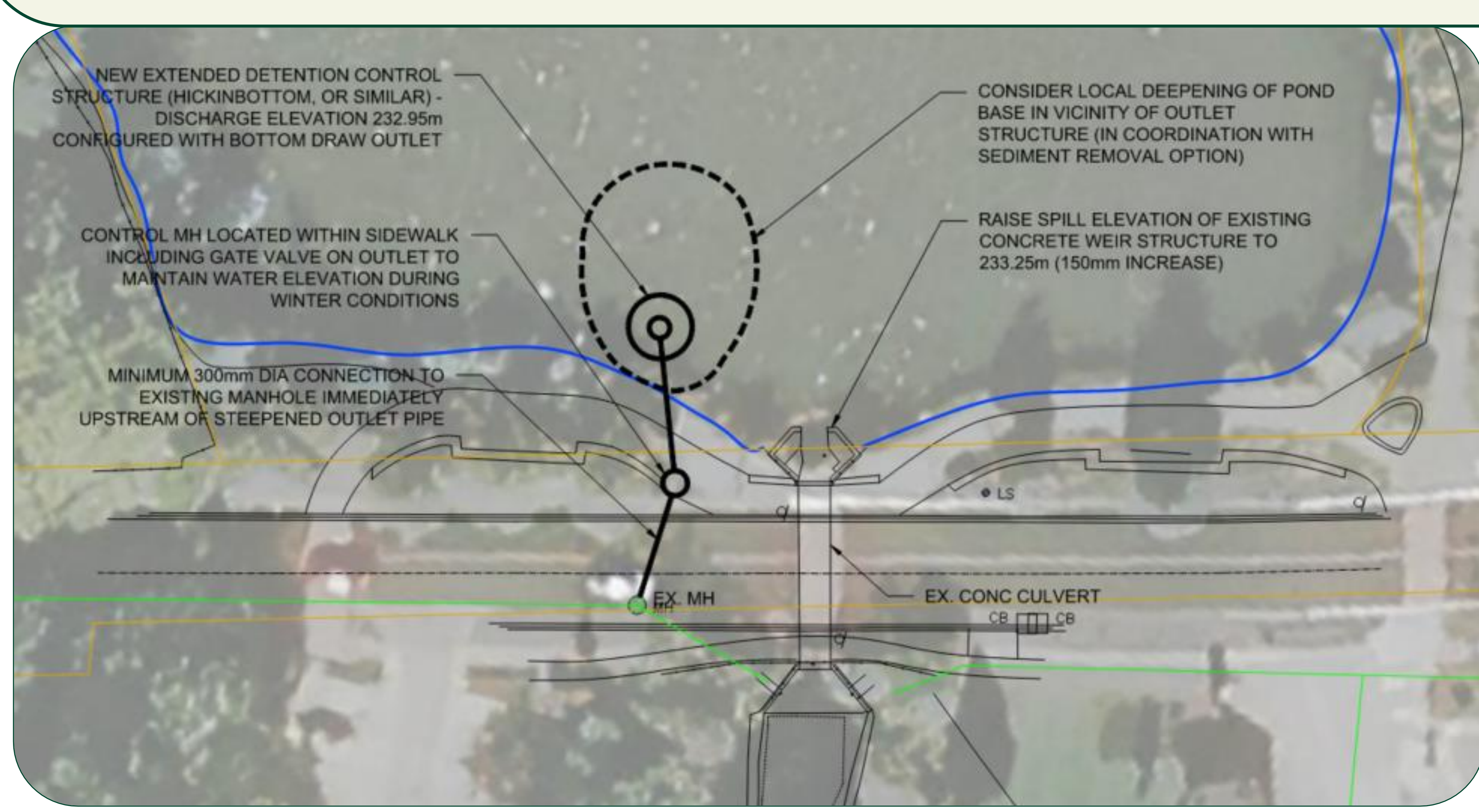
OPTION B2: OUTLET STRUCTURE RECONSTRUCTION

- Developed to improve erosion control and thermal mitigation performance of the pond.
- New extended detention control structure with bottom draw outlet, constructed within locally deepened pond base area.
- New control maintenance hole with outlet to existing system.
- Raise spill elevation of existing weir by 150 mm.
- Install a gate valve to prevent water surface level fluctuation in winter months (to help with ice formation).
- Provides extended detention (erosion control) for the ~5 mm rainfall event, with water level fluctuation of +/- 150 mm from current normal water levels.

Drawbacks:

- No significant drawbacks anticipated.
- Minor increase in maintenance obligations due to new asset component.

Cost Estimate: *$87,000*



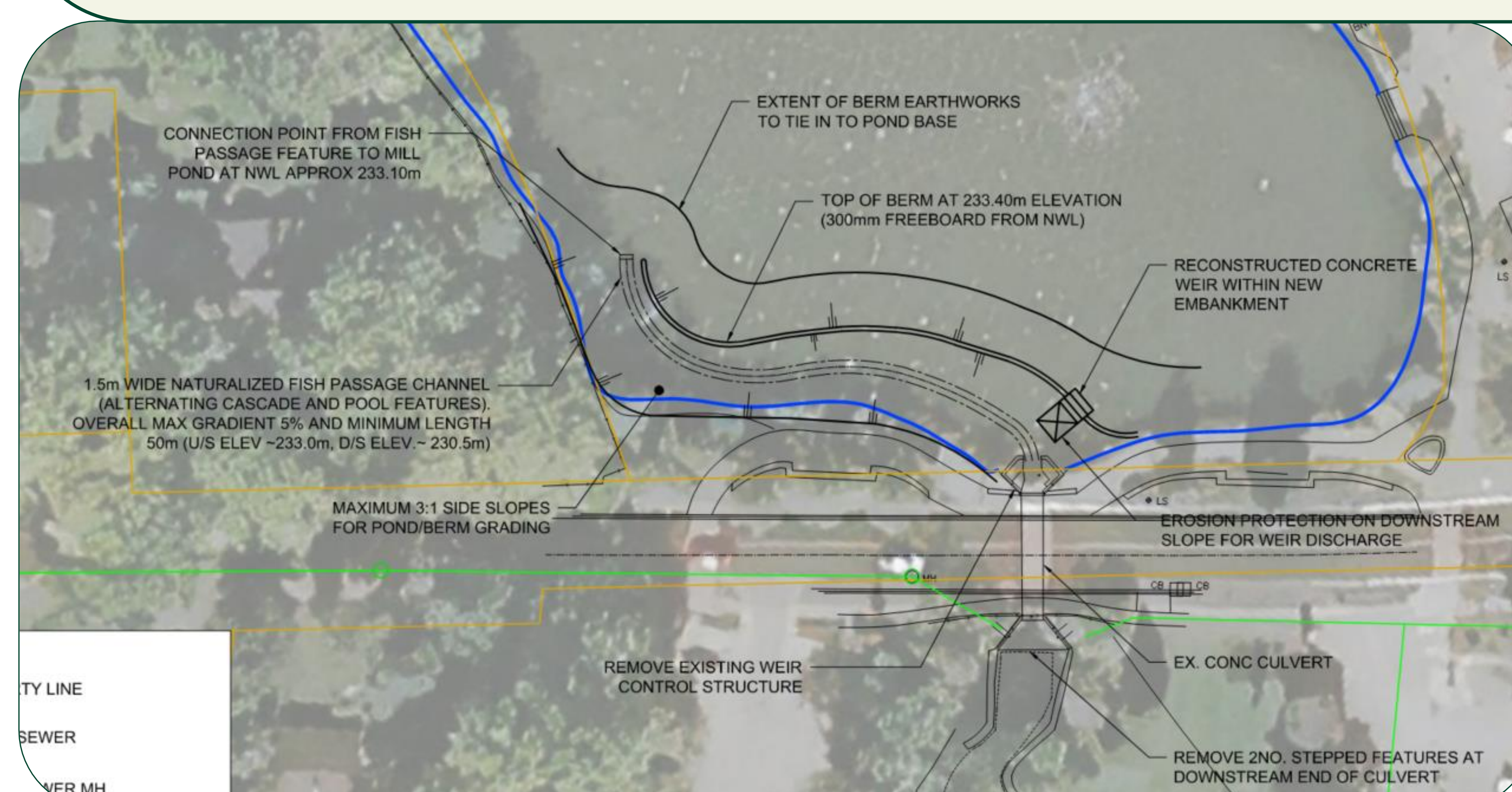
OPTION B3: FISH PASSAGE

- Developed to facilitate fish passage into Mill Pond from downstream areas.
- Removal of the existing weir structure and stepped channel features downstream of Mill Street.
- Construct a new berm to contain a naturalized fish passage channel (alternating cascade and pool features, 50 m long at max 5% grade).
- Provision of a concrete overflow weir within the new embankment for wet weather flows.
- Incompatible with Option B2.

Drawbacks:

- Opening Mill Pond to downstream fish may not be advisable due to the different habitats and fish communities.
- More difficult to implement from a permitting and natural environment disturbance perspective.
- Would require sediment removal to bottom of pond elevation over the full footprint of the proposed berm and fishway.

Cost Estimate: *$595,000 (when combined with Option B1 Complete Sediment Removal); $1,120,000 (when combined with Option B1 Partial Sediment Removal).*



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Potential Alternatives (6)

TRAIL AND RIVER (1)

DO NOTHING

- Leave the trails and river in their current condition

Drawbacks:

- Ongoing erosion issues at existing trail crossing locations would remain unaddressed and watercourse conditions in these areas would continue to deteriorate.
- Trails would continue to be susceptible to erosion due to undersized watercourse crossings (e.g. by overtopping during large storm events)
- Risk of complete failure of the existing gabion wall retaining structure south of Mill Street would increase the longer it is left unattended.
- Erosion issues observed in the channel near Kerrybrook Drive would continue to worsen.

***Cost Estimate:** Zero implementation costs, but ongoing maintenance, repair and emergency costs would remain and likely increase.*

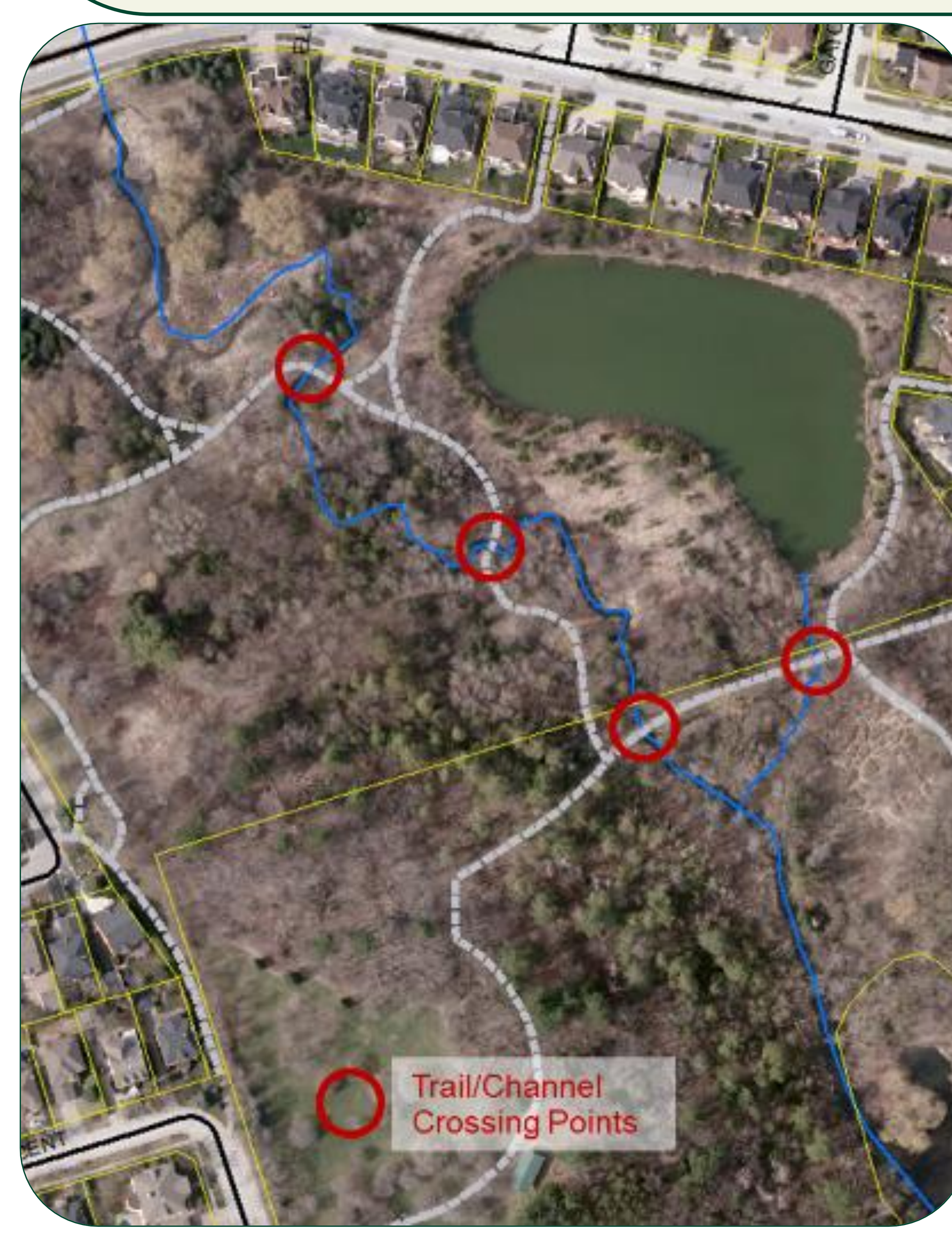
OPTION C1: "REPAIR"

- Focuses on repair of existing infrastructure in current locations/configurations.
- Replace trail crossings threatened by erosion with new culverts and/or bridges, as required.
- Remove failing gabion wall at Mill Street and replace with armourstone, including regrading.
- Minor repairs to the timber pedestrian bridge south of Mill Street.
- Bank protection to mitigate erosion issues at Kerrybrook Drive.

Drawbacks:

- Existing conditions would be stabilized but none of the additional benefits of Option C2 would be achieved.
- No opportunity to remove stream crossings which would improve natural environment and eliminate (or reduce) erosion risk.

***Cost Estimate:** $452,000*



Potential Alternatives (7)

TRAIL AND RIVER (2)

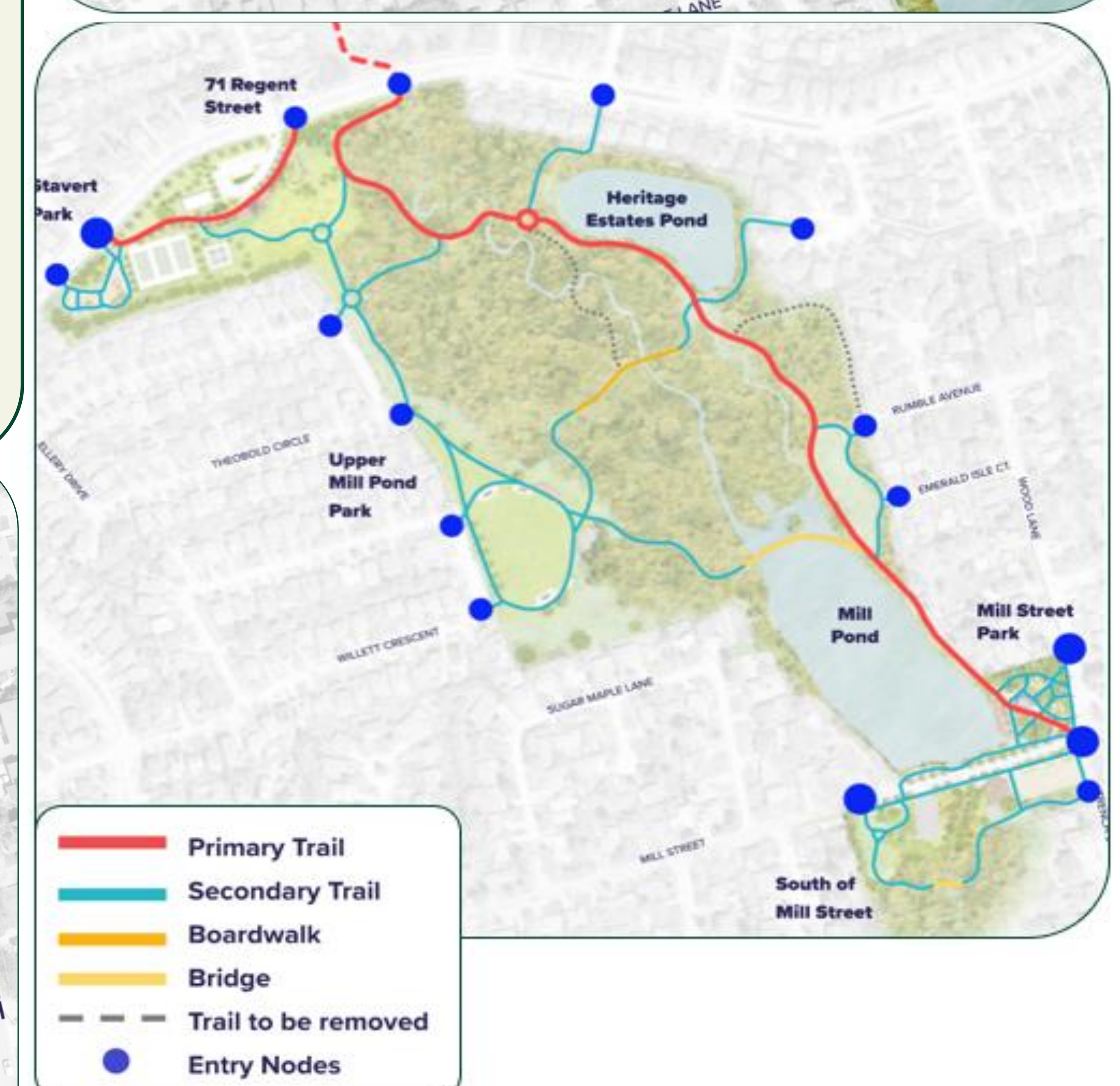
OPTION C2: "REPAIR & ENHANCE"

- Builds upon the "Repair" option and integrates a series of enhancements developed in conjunction with the Parks Master Plan project.
- Rehabilitation of valleyland sites combined with trail realignment (as per Master Plan) to reduce the number of crossings:
  - ➢ North Trail Crossing – remove existing culvert and replace with a pedestrian bridge structure.
  - ➢ Central Trail Crossing – remove existing bridge and restore to natural channel conditions (crossing no longer required due to trail realignment).
  - ➢ South Trail Crossing – replace existing culvert crossing with an elevated boardwalk running east-west over the northern part of Mill Pond.
  - ➢ 17-3 Outlet Crossing – upgrade existing culverts to increase conveyance and provide open-bottom design.
- Natural environment enhancements due to replacement of portions of gravel trail with elevated boardwalk and complete removal of other sections of gravel trail, resulting in restoration and improved connectivity to the wetland communities.
- Replacement of gabion basket wall and erosion protection works at Kerrybrook Drive (from Option C1) included in this option.

Drawbacks:

- No significant drawbacks anticipated
- Some vegetation removal (relatively minor) required to realign trail west of Heritage Estates SWM Facility.

Cost Estimate: *$1,085,000*



Please refer to Mill Pond Park Revitalization Master Plan boards for further details on proposed park improvements.

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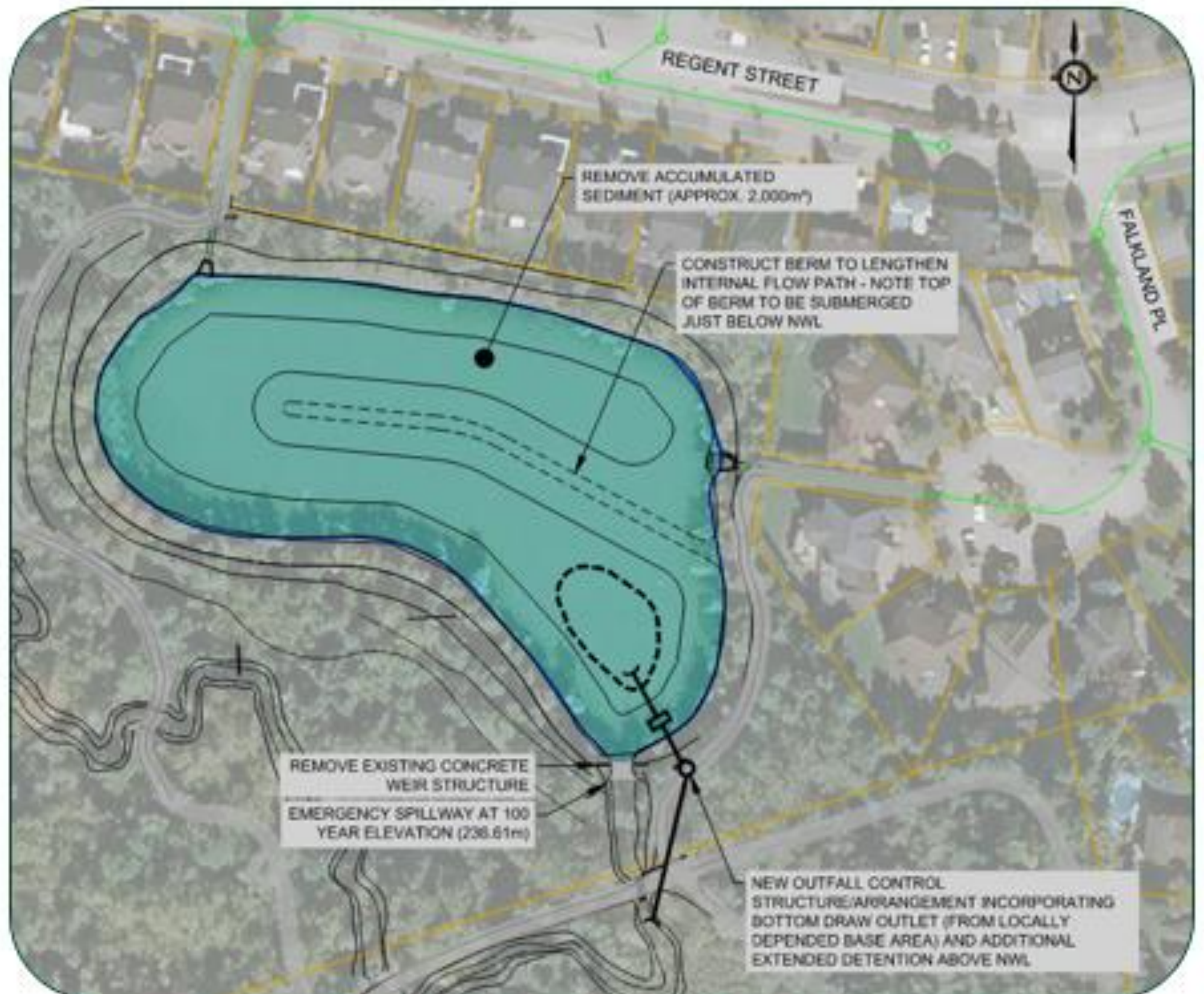
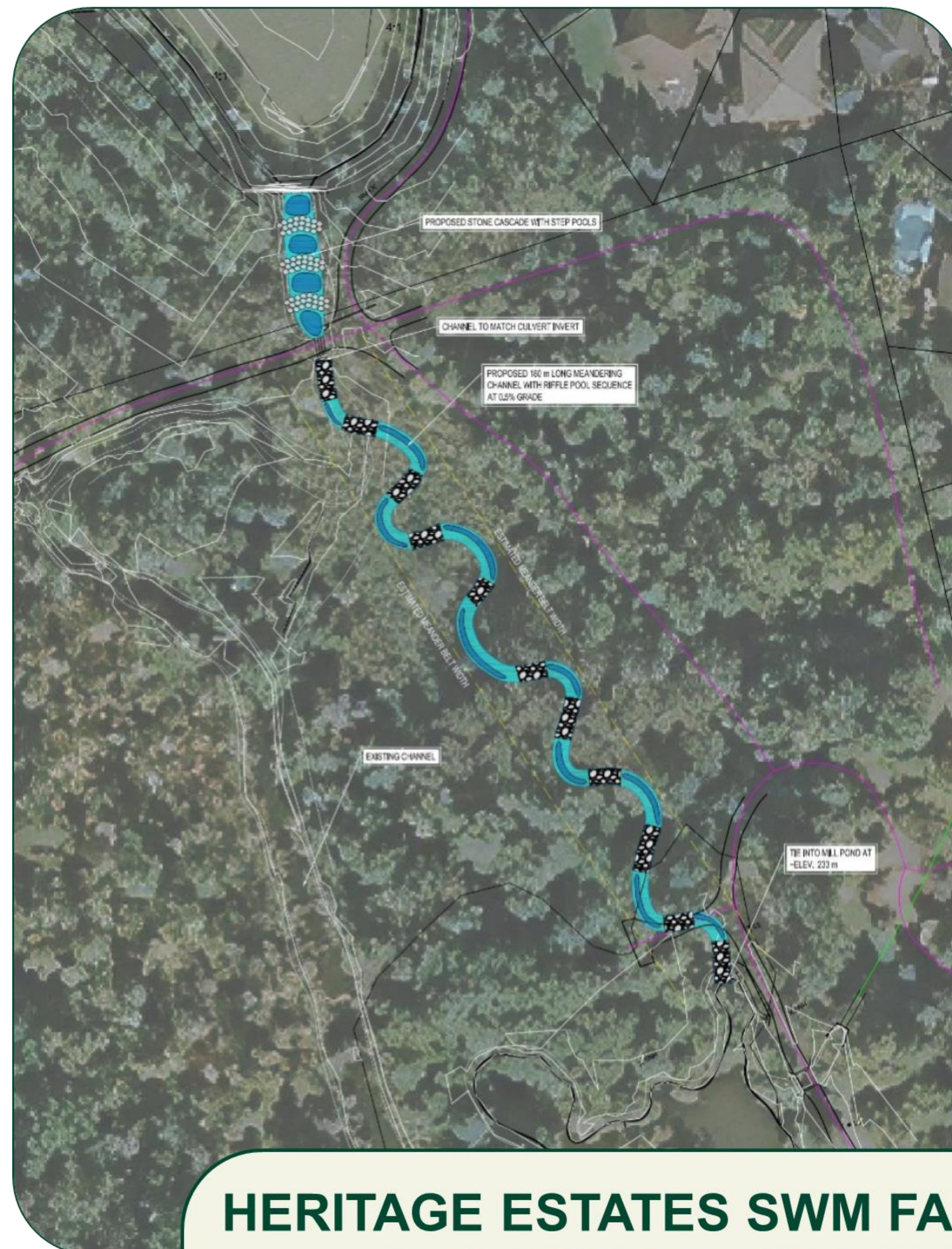
Recommendations

Project Component	Preferred Solution	Evaluation Summary	Cost Estimate
Heritage Estates SWM Facility (17-3)	A2: "MODERATE" REHABILITATION	• Sediment removal and pond retrofit will improve water quality treatment, reduce downstream erosion and decrease long-term maintenance. • Reduced side slopes and increased planting will make the pond safer for the public.	$1,265,000
Heritage Estates SWM Facility (17-3): Outlet Channel	A5: NEW OUTLET CHANNEL*	• Construction of a new outlet channel will address stagnant water conditions at the north end of Mill Pond. • This option will also increase the quality and quantity of aquatic habitat, allow for the removal of invasive species and provide educational opportunities. *Note that further studies are ongoing to quantify the impacts of this alternative on wetland areas north of Mill Pond and to assess the relative compensation activities that may be necessary to support implementation.	$1,067,000
Mill Pond: Sediment Removal	B1: PARTIAL REMOVAL	• Sediment removal will have significant benefits for water quality and aquatic habitat conditions in the pond and to downstream habitat. • This option would also improve ice conditions in the north end of the pond for winter recreation activities. • Large additional costs for complete sediment removal would not result in significant additional benefits.	$3,075,000
Mill Pond: Outlet	B2: OUTLET STRUCTURE RECONSTRUCTION	• Construction of a new outlet structure would result in significant improvement to downstream aquatic habitat due to reduced water temperature and erosion.	$87,000
Trail and River	C2: "REPAIR & ENHANCE"	• The trail realignment will result in the reduction of the number of river crossings, which will benefit the natural environment and will reduce the City's maintenance costs. • This option would also allow for natural environment enhancements due to the replacement of portions of gravel trail with elevated boardwalk and complete removal of other sections of gravel trail, resulting in restoration and improved connectivity to the wetland communities. • This option was developed per the direction of the Mill Pond Park Revitalization Master Plan.	$1,085,000

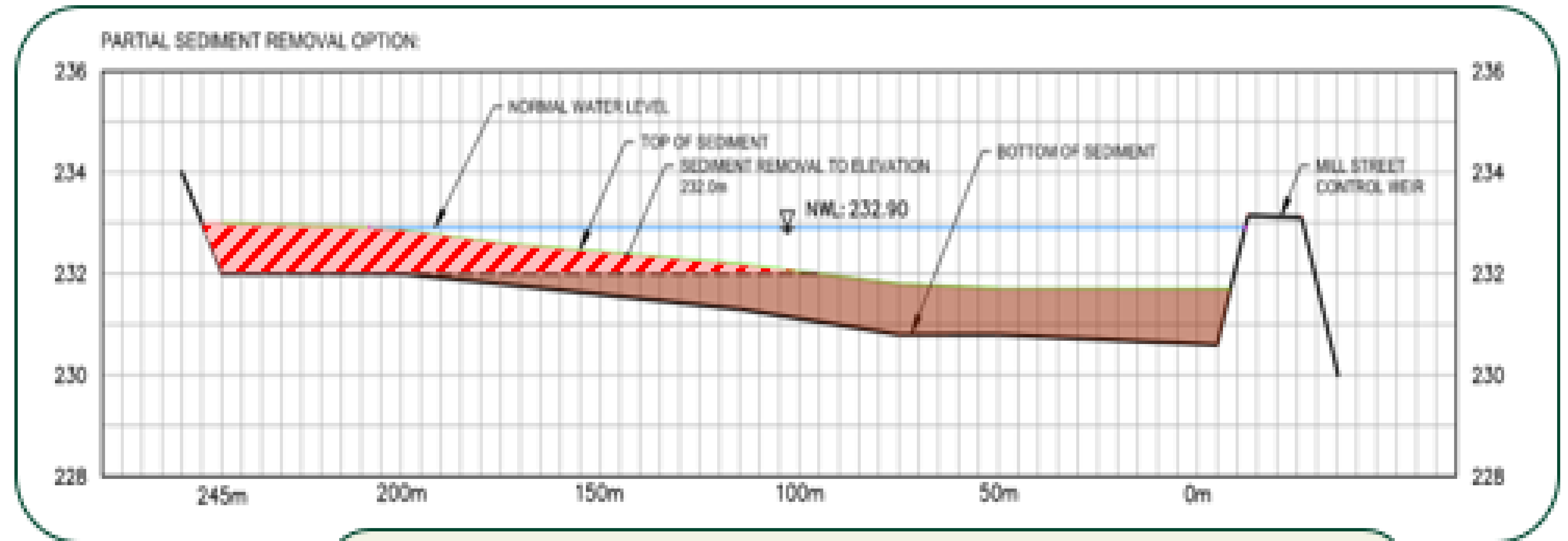
Recommendations overview



HERITAGE ESTATES SWM FACILITY (17-3)
OPTION A2: 17-3 "MODERATE" REHABILITATION

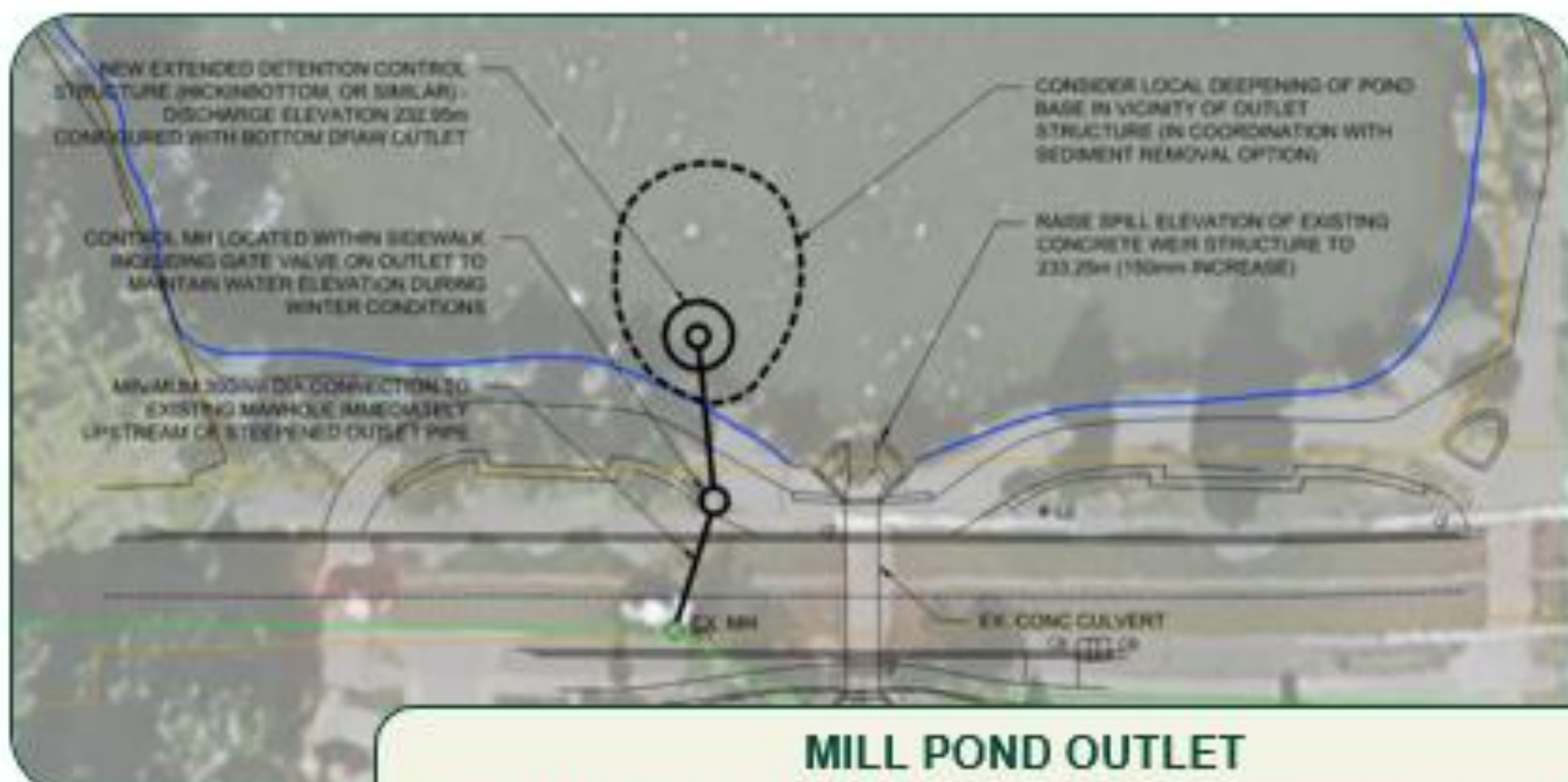


HERITAGE ESTATES SWM FACILITY (17-3) OUTLET CHANNEL
OPTION A5: 17-3 NEW OUTLET CHANNEL



MILL POND SEDIMENT REMOVAL
OPTION B1: PARTIAL SEDIMENT REMOVAL

TRAIL AND RIVER
OPTION C2: "REPAIR & ENHANCE"



MILL POND OUTLET
OPTION B2: OUTLET STRUCTURE RECONSTRUCTION